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ONE OF THE BEST: Bibby believes that Malaysia is one of the best countries in the world in which to start a games development company.

It's not quite "game over, man" — in a whiny Bill Paxton (*Aliens*) tone — for the fledgling games development industry in Malaysia. Despite some seemingly insurmountable barriers, there are a few companies trying to create an industry built on their passion.

In.Tech's CHRIS CHONG takes a break from playing computer games at the office — well, except for research purposes, you understand — to get an indepth look at the state of the industry in Malaysia. In Part II this Thursday, he will look at the people behind the games, and how you can become one of them!

ONCE the domain of kids and geeks, videogames have now become a mainstream form of entertainment, surpassing both the film and music industry in terms of revenue, worth an estimated US\$25bil (RM95bil) worldwide. Despite what most people — especially parents — think, it is possible to earn a living by making videogames. It's also the dream job for the videogame enthusiast. After all, if playing games can be a

Game on, Malaysia



lot of fun, surely making them can be more so. Most hardcore gamers would definitely have thought about designing a game at some point in their lives. Some actually put their game ideas onto paper, with level designs, sketches, scenarios and other diagrams. The more hardcore play around with game-mods such as level editors. Then, you've got the truly obsessed lot who've actually decided to make their games. Some only go as far as getting a copy of *C++ Programming for Dummies* or toying around with little computer programs. Even fewer go on to make actual, playable games. Unfortunately, that's as far as most individuals ever go, especially in Malaysia. It's rather sad that most of them end up making more "realistic" career choices when they grow up, becoming engineers, lawyers, accountants and — if their career counsellors were sleeping on the job — journalists instead. The thing is, there actually is a games industry in Malaysia, but it's still very much in its infancy. There are only a few games development companies, and the number of job vacancies they currently have are fewer still. On the other hand, you could look at the



MORE TO COME: GameBrains has made nine published Gameboy and Gameboy Advance games. Unfortunately, due to non-disclosure agreements, it is not allowed to show its latest game, which is currently in development for the PS2 and Game Cube. — www.gamebrains.compic

positive side of things and see it as an opportunity for growth.

Getting started

Brett Bibby is the CEO of GameBrains (www.gamebrains.com), a local company specialising in console games. Founded back in 1998, the company started off by making games for the Nintendo Game Boy Colour and Game Boy Advance, a strategy which resulted in nine published games which are sold internationally by major publishers such as THQ, Universal Interactive and EA Sports. Bibby's office is located pretty high up in one of the Petronas twin towers. His desk is

adorned with a fairly standard-looking PC monitor, but lurking beneath it are Sony PS2 and Nintendo Game Cube hardware development kits. He looks quite relaxed these days, but the truth is that his company had to come a long way to get to where it currently is. "It wasn't always like this. There have been quite a number of times when the company really should have gone bust. "Call it dumb luck or great timing, but every time it looked as if we weren't going to make it, somebody came along and threw us a lifeline," he says. The games industry is a challenging one to

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enter. One of the hardest parts is actually starting a company, but — surprise, surprise — it's probably easier to start a games company in Malaysia than anywhere else in the world.

One of the lifelines Bibby spoke of was the Multimedia Super Corridor R&D Grant Scheme (MGS), of which GameBrains is a recipient.

"If you need money and you're doing technology, the question you should ask is 'Why aren't I an MSC status company?' The MSC is a brilliant programme, giving you tax-free incentives and other advantages," says Bibby.

"Obviously, step one would be to become an MSC status company, which is a fairly straightforward process. All you have to do is get in touch with the MSC Grant Scheme. If your application for a grant is approved, you will automatically get an MSC status too."

Contrary to what some critics of the MSC says, he says that if you really know what you're doing, possess the relevant skills and have a sound business model, it is surprisingly easy to get funding for your project.

"Malaysia's amazing. Even during the process of waiting for the grant, I kept expecting things to go wrong, like 'Oh ... you didn't fill out form 53B.' You know, that sort of thing. It was never like that," says Bibby.

The application process requires an eligible MSC-status company, such as GameBrains, to discuss its proposed R&D project with the MGS unit of Multimedia Development Corp Sdn Bhd (MDC), the caretaker of the overall MSC project. The company then has to present its proposal to the Technology and Commercial Evaluation Committee (TCEC).

If the proposal is in line with the required criteria, the company is advised to submit its application. This is followed by further on-site checks by the TCEC.

"Within a couple of weeks, we got our money and that was it. There was no funny business. They were fast, courteous and professional," says Bibby.

"I do not attribute it to me being a foreigner; other people I know have got the same treatment and succeeded in getting funding."

One thing to take note of is that the government isn't giving away bags of money to just about anybody.

"I know some people who *didn't* get grants, and when I looked at their proposals, they were awful. I wouldn't think of investing or working at their companies. The government isn't there to hand out money for things that aren't worth-while," he says.

Spending money

So how much money do you need to start a viable games development company?

If you're planning on developing console games, you will have to become a licensed developer, which is a very tricky process.

"You can be a billionaire, call up Sony and say 'I am going to make PS2 games' and they will definitely reply 'No, you're not!' If you ask why, they'll say it's because they say so," claims Bibby.

Console manufacturers aren't about to share their technology with just about anybody, it seems. The last thing they need is for a

How much does it cost?



AVAILABLE SOON: Phoenix Games Studio's massive multiplayer online RPG, *Fung Wan Online* is currently in beta testing and is set to be released later this year.



EXPENSIVE: It is more expensive to develop console games since hardware development kits, such as the PS2 Development Tool DTL-T10000, cost around RM60,000 each.

whole legion of poor-quality games to flood their platforms.

There is no licence fee required to become a PS2 developer, just a rather long approval process.

"They say it depends on what you're going to do, but it's also relationship-based," says Bibby. "It took us two years to get our PS2 licence. Even then, all this is just to get *permission*, the right to write software on their platform. They didn't even give us a development kit!"

"If you want to get this baby here, it'll cost you RM60,000," he says, gently stroking his PS2 development kit.

"This is weapons grade technology, according to Sony, and the British and Malaysian governments. Once you've got this, you'll have to purchase the rest of your equipment at exorbitant prices before you can develop."

The cost of starting up a games company of the same scale as GameBrains is about RM2mil. This is just to get it off the ground with a small group of staff, and involves setting up your management structure, hiring your lead artists, designers and programmers, and

creating prototypes that will get you going for a year.

Once you've got everything fleshed out, you'll need another two to four million ringgit to *actually* produce something.

This is no exaggeration, according to Bibby: "You can look at a spreadsheet and think that you don't need that much money. One thing people always fail to take into account is the number of times you will get it wrong, which will be more often than (getting it) right."

"If I make a 3D model, I'll have to make three models and throw them away before I make the one I'm going to use. While other industries talk about 5-20% wastage, you're talking about 500-1,000% wastage in the games industry."

"You should calculate how much you think it will take and multiply it by four, and you'd be about right. That's been true for the 20 years that I've been doing this."

"It's just not possible, even with a blueprint, to make something that doesn't get thrown away. In making that thing, you fail a number of times."

Bibby does point out that if you're making a game of a much



smaller scale, such as a PDA or mobile phone game, you can get away with fewer funds.

However, if you're planning on making games that will be sold in stores, you will have to spend large amounts of money.

Becoming a developer

One other problem with the games industry is that a first-class software engineering degree from the most prestigious university in the world will *not* guarantee employment.

For some companies, paper qualifications count for very little, if anything at all. This is a bit of a problem in exam-obsessed Malaysia.

"There are a few universities here that provide courses in game development so there's talent, but it is very raw," says Kenneth Chiang, project manager at Phoenix Games Studio Sdn Bhd (www.phoenix-gamestudios.com), in a rather sombre tone.

"It's difficult to find suitable staff; out of about a hundred interviewees, the most we'll ever hire is two. That's if we're lucky. The first thing we ask an interviewee is for an example of some of his work. We don't care about paper qualifications," he adds.

Phoenix Game Studios was formed in 2001 and is currently beta testing *Fung Wan Online*, its 100% in-house developed MMORPG (massive multiplayer online role playing game). Its office is small but packed with more than 20 employees, busy preparing the game for commercial release.

Like GameBrains, the company has received a grant under the MGS too.

Yoke Chin, project director in Phoenix Games Studios, elaborates: "What would make you stand out is if you can give us a reference, such as a mini-game that you may have developed as a hobby in your own free time. Or, if you're into animation, maybe a short 3D animation of your own."

"That would impress us and show us your potential. It would also allow us to gauge your abilities. This is also applies to those who have done game development courses."

Another problem with the recruitment process is the sheer number of applicants who really aren't cut out for the job.

"There are many videogame enthusiasts in Malaysia. If you put out an ad for a game designer, all of the game designer wannabees will write in. An interest in games doesn't necessarily mean that you're good at designing them," says Chin.

"We believe that the talent is there but we really have to hunt for it. There are very few people in Malaysia with any experience in game design, so if you ask for such people, you won't find any."

"In the end, you'll just have to search through the list of applicants to find the ones with more potential — the 'rough diamonds' so to speak — that we can actually nurture. Most of the applicants are usually fresh grads."

The other issue with the industry is the limited number of job opportunities available.

"It depends on timing," says Chin. "If we're fully employed, we may not take people in. But if we start a new project we'll need to start a new team to extend our manpower and resources."

However, Chiang says that Phoenix Games Studios is ready to employ exceptional talent, regardless of whether the company has an opening or not. In fact, such people are considered a valuable asset to the company.

He explains: "Most of our leads come from word of mouth. The industry is very small and if we hear of talent, we'll go for the person even though we may not need him."

"The way we see it, if we don't hire him, somebody else will. As a result, we sometimes keep very quiet about any talent which we may have found!"

GameBrains' Bibby echoes the sentiments expressed by his peers at Phoenix Games Studios games: Good staff with exceptional talent are hard to come by. He says he would hire a hundred brilliant people if they showed up at his doorstep.

Unfortunately, that's not going to happen any time soon.

Lack of local programming talent

But unlike the Phoenix Games Studios guys, Bibby is a lot harsher in his assessment of graduates who are looking for a job in the industry.

"The typical case in Malaysia is that you hire staff, they come in and they expect *you* train them. That's not normal."

"Companies such as Electronic Arts hire people who can help *them*. They

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don't hire people just because they need a job. That's how it normally works anywhere around the world. "The point is, the more brilliant your people are, the more brilliant the organisation is," he says. When asked to rate the pool of talent in Malaysia, Bibby doesn't mince his words. "I would say mediocre, but that's being a bit generous."

The problem lies with the fact that most Malaysian graduates simply do not have the skill, knowledge or attitude to become videogame developers. Worse still, most of them are blissfully unaware of this.

"They go to school, and they learn every acronym there is, claiming to know Visual Basic, Visual C++, PHP, SQL, etc. They will spout a whole five pages of stuff they've learnt."

"However, if you ask them a simple question about any of those languages, they simply can't answer. I'm not joking," says Bibby.

"Even 15-year-old high school students in the United States know more about programming than some graduates here. It's sad. We have a quiz for applicants where I pulled a question out of *C for Dummies*, Chapter 1, and 90% of all applicants failed."

"Even when they all claim to know C, only one in 10 gets it right. It's scary."

It's not so much ignorance as it is arrogance: Some graduates think that they're really great at what they do just because they're near the top of their class. Unfortunately, when they go into a company that only hires people *at* the top, they suddenly find that they're the worst among their colleagues.

"That's the part people aren't prepared for," says Bibby. "They come in thinking that they can do lots of things, and end up thinking 'Oh my God! I suck!' They normally need an adjustment period to recover from the initial shock."

Bibby also points his finger at academic institutions which concentrate on teaching students as many programming languages as possible, rather than how to implement a wide variety of data structures and algorithms on a particular language (learning the language, so to speak).

"They're essentially writing the same program in different languages," he says. "It's like learning how to say 'What time is it' in German, Chinese, French and Italian; you're not actually learning how the Italian language works."

"Because of that, what we end up with are people who know a lot about nothing. All they know are the facts and little else."

It's a real job

But hang on for a moment ... does it really take that much to be a games developer?

The answer is, yes. Being part of the entertainment industry, it's easy to forget that games development is not just an art; it's very much a science as well.

It also happens to be on the cutting-edge - some of the most advanced 3D graphics and programming techniques are being pushed to the limit in videogames these days.

Unlike writing business or e-commerce software, having a program work bug-free isn't enough on its own. In games development, you have to follow very tight specifications.

For example, if you're required to write some code for collision detec-

Wiping out piracy may kill the games industry



BUSY AT WORK: The staff of Phoenix Games Studio busy putting the final touches to their MMORPG, Fung Wan Online.

tion that will take up only 25 clock cycles and eight kilobytes of RAM, you *must* fulfil the requirement. Here, speed and efficiency are of utmost importance.

If he can't find people who already have advanced skills, Bibby chooses the most promising candidates: Those with straight As.

GameBrains only accepts students who have excellent grades at university (in addition to relevant skills and a fanatical love for videogames, of course).

Part of the reason for this is that it's much harder to develop console games - you need to work more closely with the hardware as opposed to the simpler, higher-level software-centric environments on PCs.

Another reason for the decision criterion comes from his own personal experience. "We've interviewed thousands of people and hired some based solely on practical skills, experience and personality. In every case, they failed," says Bibby.

He argues that the only ones who came through were those with excellent grades who could grasp everything they've learnt (and there's an incredible amount of learning to be done too). Those seeking to use the "I'm good at coursework but bad at exams" argument need not apply.

"The same thing applies even in art. The artists that we've hired were the top students of their class. They're really good and they definitely know what they're doing. They don't spend their time fighting the medium. Rather, they spend their time creating great things."

"It's ridiculous when you have artists who can't even get the proportions of the human body right," says Bibby.

But there is now a glimmer of hope, thanks to a local university that's serious about games - see Part II of our special feature this Thursday.

Whither from here?

In spite of its success, the videogames industry has yet to reach the level of maturity and

stability shown by the likes of the film and recording industries. As such, it's still evolving - which makes it a rather exciting place to be in.

For years, people have been waiting for a repeat of the great videogame crash of the late 1970s and early 1980s. In those days, the industry was flooded with thousands of unoriginal, poorly made games. Consumers got bored and some companies resorted to burying their unsold cartridges in a Mexican desert (it was the most cost effective way for disposal, apparently).

There are some parallels between the industry then and now. Nothing to be frightened about, but slightly worrying nonetheless.

"As a gamer, (I have to say that) games are getting terrible. They're stagnant. There's very little innovation," Bibby says.

"Videogames used to be very abstract, which allowed for great ideas. Not anymore. In trying hard to mimic reality you're very limited in what you can do."

It's rather ironic that games are getting more bound to reality than before; no more controlling giant robots in space, that sort of thing. Even more ironic is the fact that games used to be all about escaping from reality.

"Another problem is that graphics have been done. So, we've got to look to other areas. We've got to look to issues such as AI, physics and audio. We have to look to other areas to create different gameplay experiences," he says.

Bibby believes that while the game industry is here to stay, its dominant position in the entertainment marketplace won't be permanent.

"The games industry has to come down, eventually. While the worldwide market dived over the last five years, the games industry was accelerating; it's now bigger than film and music! I don't think that it can stay at

this spot forever, though. The boom years are over, but I don't think that there's going to be another late 1970s-style crash," he says.

Nobody's going to be burying CD-ROMs in the desert, then.

Killing piracy = killing potential?

Coming back to the local scene, there has been one slightly touchy issue that is probably lingering in the minds of many would-be developers: Software piracy.

"There's a misconception that once you stamp out piracy, the public is suddenly going to start buying original software. That's not going to happen since most people in Malaysia would not be able to afford many original games with their current salaries. Even I can't afford to buy that many games with my salary," notes Bibby.

A long-standing issue has been the price of original games in Malaysia, which are obviously adjusted to suit the costs of living in the West. Paying up to RM200 for a game seems like sheer lunacy when music CDs can be bought for a mere RM39.

"I'd rather have kids play games now and maybe buy a few original games in the future, than to have nobody playing games at all. If you completely wipe out piracy, you'll kill the industry in Malaysia," he says.

Bibby isn't all that worried though, as the bulk of his sales will come from the United States, Europe and Japan, handled by foreign publishers.

Other companies are looking at different business models such as online payments and monthly subscriptions to counter the effects of piracy - Phoenix Games Studios being an example.

"Our main revenue stream is the monthly subscription for playing *Fung Wan Online*. To us, piracy is less of a threat compared to somebody who is plan-

ning to sell console games locally," says Chiang.

End-game scenario

And what does the future hold for the local games industry?

"It is really hard to say what the future of game development will be like in Malaysia since it depends so much on the talent pool available," says Bibby.

"To be competitive on a world-class level will require that the standard of education be raised significantly especially in science, mathematics and the arts."

"Until then, major successes will largely be based upon luck more than anything else, and certainly GameBrains has had its share of luck over the years to keep us going," he says.

Bibby's take on Malaysia's future in the games industry is understandably cautious. "In the international scene, the competition has always been better. We've got nine games out there on the shelves, but if we are the best that Malaysia has to offer, then we're in trouble."

"We try really hard but we can't be compared to some of the foreign developers out there. We study, we work, we do anything we can to make great games, but we still don't come close to the best."

"So we just have to work harder. We'll have to be original in some other way because our technology will never measure up. Some foreign developers have budgets of tens of millions of US dollars; we'll never have that kind of money ... ever," he admits.

Not all is bleak, though. From a more optimistic point of view, you could see the current games companies as pioneers, setting the stage for the future.

After all, the local industry is in its infancy. "As companies like GameBrains and Phoenix Games Studio mature, we can hopefully at least provide a core knowledge base upon which others can build in the future," says Bibby.

The first games developer in Malaysia

THE history of games development in Malaysia is a bit of a question mark, mainly because it was never properly documented. In the late 1980s and early 1990s, there were urban legends of "lone coders," secretly creating computer games in their bedrooms.

Then again, anybody could have claimed to have heard of a couple of coders making games somewhere without giving any specific details; surely a great way to appear a little more knowledgeable than your peers :)

After all, with the number of self-proclaimed tech geeks littered around the country, who was to say that it wasn't possible.

Well, it's time to set the record straight. Unless somebody else knows something that nobody in the games industry knows, the first games development company in Malaysia was probably Motion Pixel Sdn Bhd, founded by an Englishman by the name of Andrew Carter.

This was way back in 1992. Carter had just finished a *Star Wars* game in an Australian development company called Melbourne House, for the 8-bit Nintendo Entertainment System in 1991, and was looking to start a company of his own.

What on earth was he doing in Malaysia? "I picked Malaysia for personal reasons, since my wife is Malaysian," says Carter, who was recently back here for a holiday.

"I've been doing games since 1985 ... it was something I loved to do. So I thought, 'Why not?' It could be interesting. There were a lot of Malaysians going overseas to study, so people here were definitely well-educated. I thought that we might find the type of people here that would be able to do it."

He was moderately successful too. The company did a game under the LucasArts label called *Ghoul Patrol*. After two and a half years of development, the game was released on the 16-bit Super Nintendo (a.k.a the SNES) in the United States and Japan in 1994.

A sequel of sorts to *Zombies Ate My Neighbors* on the SNES, *Ghoul Patrol* allowed players to take on the role of either Zeke or Julie (the game's protagonists) to rescue "victims" from evil ghosts, devilish creatures and possessed photocopying machines.

Like the best SNES games of the era, it had colourful graphics, crisp sound, catchy music and great gameplay. The game has aged remarkably well too; it's still great fun to play and the highly detailed artwork has lost none of its charm ... a testament to the capabilities of Carter and his staff, surely.

The perils of a pioneer

Things didn't come easy, though. If it's hard to find capable staff for the games development industry now, the situation was absolute hell in 1992. Carter was in a unique position: Nobody had ever produced console games in Malaysia before.

As such, there wasn't any "industry" to speak of.

"We had six or seven people working on the game, including artists. All of the technical expertise were foreign, though. Our original plan was to hire local people and to train them. We hoped to establish the company that way, but it was much more difficult at that time," Carter explains, a nostalgic smile stretching across his face.

"The single hardest thing was finding technical staff with the right kind of attitude who were really interested in learning about how to make games.

"Now, mainstream game development involves higher-level languages such as C and C++, but at that time all of the coding was done in Assembly. It was difficult to find someone who knew how to program in Assembly for the 65c816 (the Super Nintendo's CPU) so we never really hired or had any local programmers; I was kind of the only one doing all of the coding!"

Another difficulty faced by Carter and his team was getting equipment in Malaysia.

At that time, there were import restrictions and tariffs, which made it much harder to get all this expensive technology into the country. There was also some difficulty in getting a licence from Nintendo, which wasn't sure if a small company in



Carter: 'The single hardest thing was finding technical staff with the right kind of attitude who were really interested in learning about how to make games.'



Malaysia would be capable of producing games up to its standards.

In the end Carter got support from LucasArts (which he had worked with before) and was given the green light to produce the game.

A rather amusing difficulty faced by Carter was that of infrastructure: More specifically, telephone lines of woeful reliability.

"After we made 'builds' of the game, we had to send it to the United States over quite creaky telephone lines at that time. With a 9.6 Kbps modem connection, you could start sending a ROM of the game to the United States from 10pm, and still be there at 3am trying to make it work.

"The lines were quite unreliable and we would either get cut off or the received data could be full of errors. Telecommunications was nothing like it is today," he says.

The one thing that Malaysia wasn't short of was artists. "There were a lot of talented artists in Malaysia and it was an interesting avenue for them. They did a lot of the 3D graphic advertising stuff which you saw on TV, and most of their skills were very adaptable to games," says Carter.

Question of timing

Shortly after the completion of *Ghoul Patrol*, Motion Pixel closed its doors and disbanded.

"I decided to go back to Australia at that point since the industry had started going through a change where only the biggest titles could sell well," Carter explains.

"This was right before the PlayStation came. As a small company, we needed some financial backing and maybe some government support to continue.

"Back in 1994, it could cost somewhere between US\$150,000 to US\$220,000 (RM570,00 to RM836,000) to make a top-of-the-line Super Nintendo game from start to finish. Today, the cost can go up to US\$10mil (RM38mil) plus marketing. One game can cost up to US\$15mil (RM57mil).

"Another thing is that, if you're in a small company in Malaysia, you're away from the rest of the industry. The danger is that the industry can just pass you by and you can no longer be on the cutting edge.

"That was the risk and my worry at that time. So, in the end I thought that it would be better to go back and ride with the industry," he says.

A rather sad outcome, but it was probably the best option. Carter did think about staying on and developing the company, hiring more local talent in the process. Unfortunately, it would have taken a lot of time and money; a rather large risk at the time.

He returned to Melbourne House (later acquired by Infogrames, which renamed itself "Atari") where he is currently the vice-president of product development.

Upon his return, he worked on several games such as *LeMans 24 Hours* on the Sega Dreamcast and *Grand Prix Challenge* on the PS2. His team is now working on *Transformers Armada: Prelude to Energon*, which is due to be released on the PS2 later this year.

Vital support needed

Carter tries to keep track of developments in the Malaysian games industry. Generally, he likens it to the Australian games industry, but not quite as stable and matured.

"The situation's more or less the same in Australia; there aren't that many games development companies around and capable staff are still a little hard to come by.

"The main difference is heritage.

Companies such as Melbourne House have been around for a long time, since 1985. They're quite an ancient developer, I suppose."

The biggest change in Malaysia over the past decade is that the government now encourages people to start games companies and all things IT, providing excellent infrastructure and funding through the Multimedia Super Corridor grant scheme.

If that's the case, why isn't there an exodus of game developers to Malaysia?

"While important, the allure of reducing costs isn't enough for most game publishers if it's the sole reason to develop in a particular country. The pool of talent in Malaysia isn't big enough. Not yet, at least.

"In this industry, the quality of your games count for more than anything else," says Carter.

He believes that support from foreign games publishers are vital for the growth of the games industry in Malaysia.

"A lot of people here love computer and video games, but software piracy is rampant; there's no real market for games in Malaysia! As a result, any games developed locally will have to be sold in the United States, Europe or Japan.

"This means that we need US or European publishers to help the development, publishing and distribution of the game. It's hard to persuade a foreign publisher to part with money to develop this kind of software in Malaysia. Maybe they don't see the advantages that can be achieved by developing something in Malaysia.

"The potential is definitely there, though," he says.

At the moment, Carter is pretty comfortable with his current job. Any chance of him coming back to Malaysia to try it all again?

"No plans at the moment, but I supposed you could say I have a love for Asia, especially Malaysia and Japan. It would be great to be back here," he says.

Going solo: The indie attraction

THE biggest anxiety faced by most would-be local game developers is the possibility that they would *not* be employed by any of the few companies in the country.

After all, the number of job opportunities are minimal. In the possible event of receiving a rejection letter through the mail, the local game developer has only one of two options: Move on to other professions (such as web design, animation, etc.), or start your own games company.

Slightly mad, you might think. After all, if it's hard enough for a well-staffed company to produce "sell-able" games, what chance could you possibly have by going at it alone?

Well, it depends on one thing: Your determination to succeed.

"Stop expecting to be employed by the games industry. Why not go ahead and start your own business. If you can't find a job, make one. Of course, it doesn't have to be full-time, depending on your approach. It's difficult but possible," says Jason Chong, a local independent game developer.

Chong and his friend Vincent Ong were students when they started making their first-ever game. Some of you might remember them — their game, *Vanguard Ace*, was nominated for the Pikom/Computimes Multimedia Title of the Year Award in 1998. They even got it published and sold in the United States.

An impressive feat for a couple of individuals, and even more so when you consider that they didn't have any prior experience.

How did these guys do it?

"I studied at a private IT college and before I actually finished, I went out and started a small company with a group of friends, a computer business," says Chong.

"Halfway through we got more interested in making games and we went on from there. At the time, it was very hard to find resources on game development. We were still very new to the Internet and most of the information we got came from the various books that we bought — books not directly about games development, but about related fields such as computer graphics."

His pal Ong continues: "It started out as a hobby. We like playing games, and we wanted to know what it was like to make one."

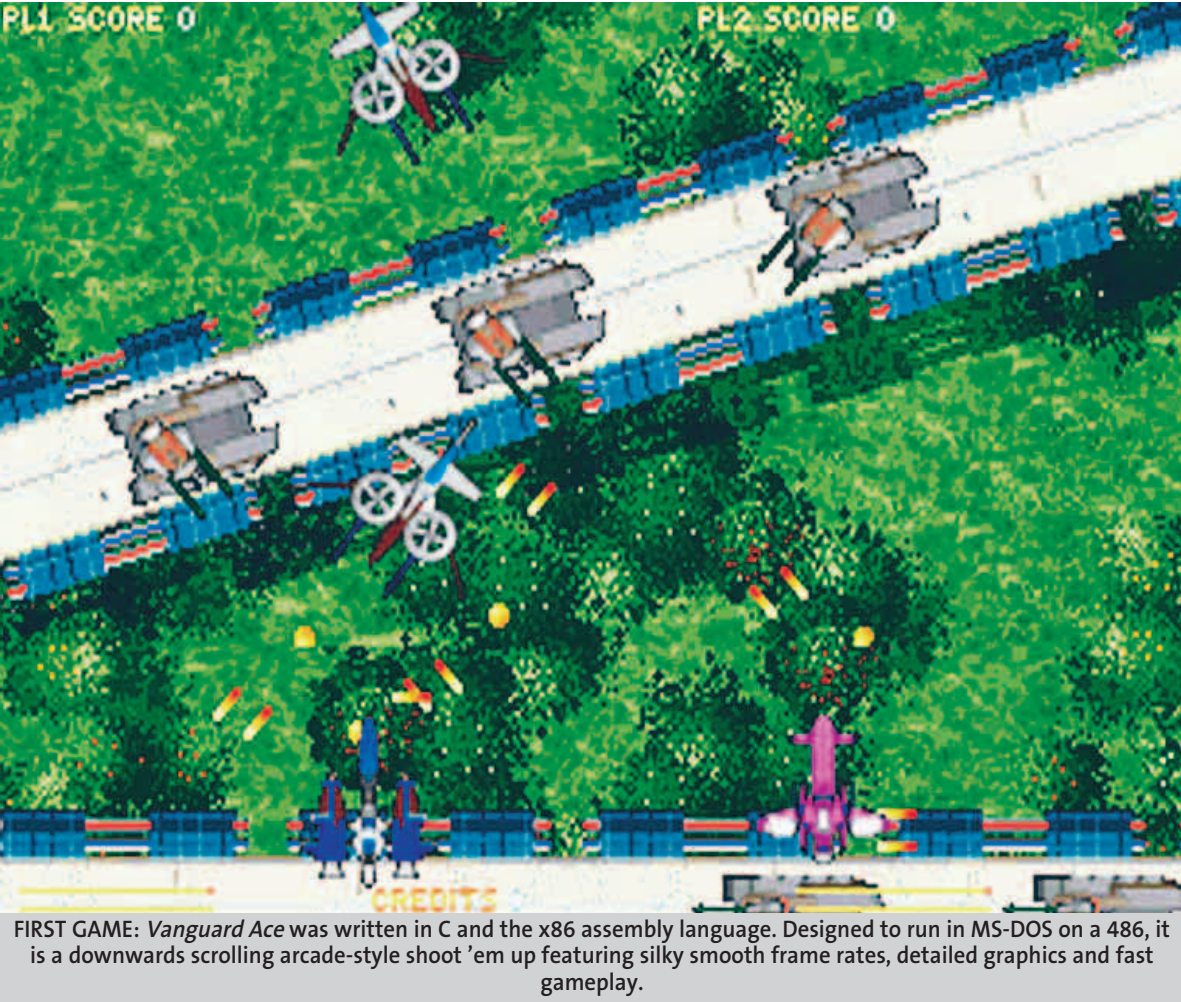
"We chose the PC platform since it was up and coming. We did a little research and self-study. Then, after we worked out what we could and couldn't do, we went ahead and did it."

And their total development costs? Zero ringgit, if you don't count meals, lodgings, a few reference books and other essential things that allow a human to live.

"We bore most of the costs out of our own pockets, although we were still living with our parents," Ong says.

"The working conditions were quite bad. Our sleeping patterns were reversed; we became nocturnal. Even our parents started complaining, saying things like 'What are you doing with your life?' It's quite hard being an independent games programmer. Sometimes, you don't get to sleep for a few nights in a row."

Since then, Chong and Ong have been relatively quiet in the indie development scene. They still tinker around a little but haven't produced anything on the same scale as *Vanguard Ace*.



FIRST GAME: *Vanguard Ace* was written in C and the x86 assembly language. Designed to run in MS-DOS on a 486, it is a downwards scrolling arcade-style shoot 'em up featuring silky smooth frame rates, detailed graphics and fast gameplay.



INDEPENDENT GAMES DEVELOPERS: Chong (left) and Ong made their first game, *Vanguard Ace*, while they were still students. Since then, they have been active in the independent game developer scene.

Compared to when they were doing it, Ong believes that the situation is much better for independent game developers now.

"The Internet is now widely available, which means that resources are more easily available. There are multiple websites. There are 'gurus' teaching you how to create certain things; how to do certain things. Information is no longer a barrier like when we first started."

Friendly advice

There are a few things to keep in mind before setting out on your own. First of all, you have to know your limits: If you're alone or in a small team, you cannot be too ambitious and compete with the big boys.

Having a desire to create videogames is great, but it's nothing

if you don't actually produce anything, according to Chong. "The hardest part of game development isn't the technical side. It's finishing the game."

"A lot of independent game developers fail because they can't finish what they started. Most people underestimate the scale of the projects they intend to do."

"So in the end, they don't meet the target and end up taking a long time. This happens even with well-funded companies. If you leave something running for too long, the interest eventually dies off."

His advice? Keep it simple. "First of all, you have to be realistic in your projects, ambitions and goals. Pick up programming; if you can't program, you can't do much. Learn languages such as C, C++, Visual C++ and, if you're making games for mobile phones, Java."

"Play the kind of games you want to make. Of course, don't look at games like *CounterStrike* since stuff like that is too difficult for you to make."

"If you want to make something more complex, you'll have to learn C++. Find out what tools and languages the games industry is using. Participate in forums, ask people how to make a game. There are also a number of free Software Development Kits (SDKs) on the Web. The information is all there and it's up to you whether you want to learn it or not."

For those who aren't well versed in programming, Ong offers an alternative view: "It doesn't have to be a 3D game. If you're creative enough, you can make a pretty good *Macromedia Flash* game. I strongly advise anybody to start small, gain some experience and then move ahead slowly."

"If you want to go further, there are many books available on game development. Some even come with source code and game engines."

Making money

At the end of the day, the desire to make games isn't enough. It's a very long process that may take up a lot of your time and energy.

Practically, you should then look to your games as a source of revenue. In order to do that, you must also know how to sell your games and how to get them published.

As with all industries, the business aspects are also important and may make or break your game.

"It is very risky to make games nowadays. The market is quite satu-

rated and you'll have to go up against the big boys. Also, you definitely cannot look at the Malaysian market to sell games since the piracy situation is the same as it was 10 years ago," says Chong.

"It's actually better if you look to the international market. There are many websites like Dexterity Software (www.dexterity.com), which give you tips on how to sell your games online. It's good because you're not just making games for fun; you also get rewarded for your efforts."

"Remember, making the game is only part of the process. You have to do a bit of market research too. For example, what kind of games to make for what target market and how to sell it. It's a business."

One platform that Chong strongly recommends for game development is the PDA (personal digital assistant).

Because of the platform's simplicity, it doesn't take as much effort to produce an A-list game on the PDA compared to the PC.

"You should target markets that are not so hardcore, such as games for casual gamers who own PDAs. It's a growing market sector."

For many independent game developers, the Net may be the only way to sell games. The retail sector is saturated and it costs a lot of money to put your games on retail shelves.

The only way to do that is to get a mainstream publisher to handle it for you, which is anything but easy. Selling games on the Net does have one great advantage, though.

"I think that in future, as broadband becomes even more popular, most people would probably sell and buy games through the Internet. What's really exciting is that in this area, the small players and big players actually compete on equal ground. There's no shelf-space to speak of."

There are sites such as Handango (www.handango.com) that specialise in selling software for Pocket PC, Palm OS and other PDA platforms online. Whether you are a big company or a bedroom coder, your product will have the same amount of space on their site.

This sounds like a good idea, but is it really possible?

"It's possible. Many independent games developers do this in the States," says Chong.

"If you make a game of the same quality of those made in other countries, you can easily make your self a bundle if you are paid in US dollars."

"Let's say you sell a game for US\$15 (RM57), about 50 copies a month. That's about RM2,850 a month! This is assuming that you're self-sufficient, able to write your own code, create graphics, music and other things."

"Shareware games are making a comeback, but now they're called independent games instead. Also, thanks to the advancement of development tools, the quality of shareware titles are much better."

Chong also says that it's much easier to receive payment these days.

"In those days, getting payment for shareware products was very difficult. Online transactions with credit cards were hard to do, you had to send cheques and money orders. Nowadays, there are plenty of Internet payment collection ser-

IN AN industry where millions of dollars are being poured into the development of individual titles, there is a sense that videogames aren't what they used to be. The days of simple, yet highly playable games such as *Space Invaders*, *Pac Man* and *Asteroids* seem to have passed, replaced by the complex games of today with production values that rival even the best that the film industry has to offer.

Nowadays, gamers expect Hollywood special effects, great music, engrossing storylines and brilliant artwork in games. Indeed, arranging a bunch of oddly-shaped falling bricks isn't considered quite good enough anymore.

Taking this into account, it's rather odd that the latest emerging market segment in the games industry is bringing it back to its roots — back to the days of beeping sounds and blocky graphics.

Yep, mobile phone games are the next big thing, apparently.

Cellphone operators and service providers have already jumped onto the bandwagon, churning out mobile games by the hundreds. As unbelievable as it may seem, people are actually buying cheap, simple and ugly games again.

What's going on?

Different type of gamer

The success behind the mobile phone games industry stems from the fact that it does *not* target the usual hardcore gamer (i.e. the guys who go out and buy PC gaming rigs, PS2s, Game Boys and Xboxes).

Rather, they target the casual user who is more likely to play a game just to pass the time while waiting for something. If there's one thing market researchers have figured out, it's that people would rather fiddle with something than to die of boredom in a queue.

"Our CEO saw some opportunity in providing entertainment on mobile phones. Early examples included SMS text-based games and downloadable ringtones," says Lee Yow Chuan, head of the technical R&D unit for UnrealMind Interactive Sdn Bhd (www.unrealmind.com).

The company was founded in 2001 to deliver games and other forms of entertainment on the mobile phone platform. It is currently staffed by about seven people, currently working on a series of detective puzzle games under its *Chabomzie* family.

"The whole idea was to produce entertainment content and we planned to enter the mobile phone games industry, but at that time, the phones were not that capable yet. We waited until the time was right, when there were enough phones to deploy games, and now we're focused on creating mobile games," he says.

According to Lee, mobile phones offer a lot of possibilities as a platform.

"There is a future for it. It doesn't really compete with other gaming platforms — it is a unique platform itself since it has a very wide audience already. Most people have a mobile phone but not everyone is a gamer; there is a wide range of people to cater for such as adults or girls, who have different preferences for games."

"Also, because all phones are connected to the network, we can exploit multiplayer capabilities in the future. Unfortunately, the wireless connections here aren't good enough yet, so we can't really go into that," he says.

Making games

UnrealMind writes all of its games in J2ME (Java 2 Micro Edition) for use on Java-enabled phones (java.sun.com). The company currently concentrates solely on mobile phones, and has no PDA (personal digital assistant) games in development.

"We like Java because we can find a lot of documentation from forums; it's much easier to learn," explains Lee.

Java is the most common choice for making mobile-phone applications since it is largely platform-independent; the same application can run on different mobile phones and other Java devices with little or no reworking required.

Breaking into a new market



NEXT BIG THING: Lee believes that mobile phones have tremendous potential as a games platform since it has the widest audience.



However, it doesn't solve the compatibility issues that come with such a large variety of handsets in the market.

"Every phone has a different screen size, different processor speed and different storage capacity. Some games will work on a certain phone, but not on another," Lee complains.

"There's also a lack of documentation on the specifications for various phones, which makes it hard to debug compatibility problems in games. The manufacturers can be on the unhelpful side too, which leaves us no choice but to resort to trial and error."

The development cycle for mobile games is much shorter than for other platforms. A well-designed mobile game can be completed in just four months, as opposed to the one- or two-year development cycles for console games, Lee says.

"It makes it much easier for we developers. When you think of an idea, you can quickly put some code together, which allows us to see results almost instantaneously."

As you can probably guess, simplicity is the key.

"We don't really have to go overboard with the technology since there's no use trying to break the limits. In console games, you have access to machine language, which allows you to do lots of things such as speed optimisation and graphics tricks. Unfortunately, it also makes console development very difficult.

"In mobile phones, there's not much low-level optimisation that can be done," he says.

This simplicity is a double-edged sword though; in limiting the extent that programmers can access the hardware on mobile phones, they are also severely limited in performance.

The different shapes and sizes of handsets mean that mobile developers also have to approach game design differently.

"We start by thinking from the device perspective and taking into account the limitations that it has. Mobile phones have many keypads but if you utilise all of them, the actual gameplay may suffer since the controls may end up being really confusing," says Lee.

"Requiring the user to keep their attention on the phone all the time is no good either. Since most people play mobile phone games to kill time, they have to be simple, fun and easy to play," he adds.

Real gaming platform?

One problem with the mobile phone games industry is the lack of innovation. In an attempt to make a quick buck, developers are churning out rehashes of old games.

As a result, you can easily download a whole bunch of games that, apart from graphics and artwork, play identically.

However, Lee doesn't see this as a lack of creativity but rather as a transitional phase. "The reason that we're seeing all these old games re-appearing on the platform is that people are still learning the capabilities of mobile devices. Once we have confidence of what can or cannot be done, you will start to see innovations in mobile phone game design."

Speaking of learning, the J2ME mobile phone platform has become a great place to learn how to program games since it brings you back to the basics of game design. Moreover, the software developer toolkits are freely available of the Net.

"You can compile a game and let your friends play it on their handsets. It's a fun way to improve your game development skills, compared to spending months or years trying to come up with your own PC game," says Lee.

In closing, Lee also points out that the mobile phone game industry is the only one where nobody has an unfair advantage.

"It's so easy to penetrate the market. Somebody can just download all of the tools and start programming the next day. It depends on determination and perseverance.

"Mobile gaming is new, unlike PC and console games where the United States and Japan have a 10-year headstart; there's almost no way we can close the gap.

"For local game developers, the stakes are not so high with mobile phone games since everyone's starting at the same time. As a result, you have a good chance of succeeding," he says.



GAMES FOR PDA: After doing *Vanguard Ace*, Chong has been creating PDA games in his spare time. If you're interested in game programming, he suggests you do the same.

There's passion but no money

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vices such as Kagi (www.kagi.com), which are very valuable to independent game developers.

"The companies may be based elsewhere but even Malaysian indie developers can use them," he says.

Local indie scene

Unfortunately, there isn't much of an independent game developer community in Malaysia. As usual, there are rumours of a few programmers here and there, doing some work of their own. Also, talk is big, but few people actually deliver what they set out to do.

When asked about the possibility of a group of independent games developers coming together to make a game of a larger scale, Chong was sceptical.

"Without a fixed income, it is very difficult. In Malaysia, people are very practical by nature; they're not going to do work for free. Even if you have day jobs, the time taken for a group to organise themselves will be pretty long.

"Another problem is that most people lose interest and abandon the project after some time. To keep the interest, motivation and passion alive is very difficult.

For most people, the sole motivation is money, unfortunately."

As far as Ong is concerned, his game development aspirations are on hold, but he definitely intends to resume sometime in the future.

"When making *Vanguard Ace*, our motivation was to create something new. There is a lot of satisfaction getting a real product out into the market," he says.

"I believe that we can make a better game now since we still have the passion. The only thing missing is the money!

"We intend to resurface someday. We have a lot of new ideas but we're waiting for the chance to make a comeback," he says.

Meanwhile, Chong has finally landed himself a job in a games company in Kuala Lumpur. If anything, at least he doesn't have that day job to distract him from his favourite past-time anymore.

On Tuesday, we looked at the state of the game development industry in Malaysia. In this issue, **CHRIS CHONG** gives us a better look at what it means to be a game developer, and more importantly, what it takes.

THE videogames industry would be nothing without its workforce. Actually, any industry would be pretty much useless if there wasn't anybody in it.

The point is, these are the people who make it happen ... the guys (and girls) behind the scenes who give most of us a reason to buy a PC in the first place: Game developers.

And here they are to tell you about their jobs, their thoughts and a little advice if you want to be in their shoes.

The programmer

Hafiz Pon is the chief technology officer of Phoenix Games Studio. Prior to his current job, he was programming back-end databases and webservers.

Pretty mundane stuff, surely. But even then he fiddled around with DirectX a lot, developing 3D games as a hobby.

Looks like the hobby paid off.

In.Tech: What do you need to become a programmer?

Hafiz: The raw skills for a programmer are pretty standard. You must have good analytical skills, problem-solving capabilities and a logical mindset. Proficiency in a programming language such as C or C++ is a must.

In.Tech: What's your daily routine like?

Hafiz: Basically, our jobs involve consolidating feature requirements and implementing them. Along the way problems may pop up which either cause the program to run 10 times slower or crash.

This is where our skills come in. You can't really call it a routine since it can be pretty calm sometimes (a relaxing day spent coming up with ideas, for example), or it could be a mad rush to fix a bug.

In.Tech: How many programmers are there working on *Fung Wan Online* at the moment?

Hafiz: At the moment, eight. It's not a fixed number, though; it varies from project to project.

In.Tech: Do you feel that programming is a creative process?

Hafiz: Definitely. There are many ways to accomplish the same task, so the best programmer is the one who is able to write his code as efficiently and cleanly as possible. There's also a constant dilemma, a trade-off between adding more features without sacrificing performance.

In.Tech: What's the best part about the job?

Hafiz: Seeing your work up and running.

In.Tech: And the worst?

Hafiz: Debugging. Programmers hate bugs but we prefer those that happen all the time; at least those are easy to track down. The really annoying ones are those that randomly happen once in a while; they're very difficult to track and repair since we don't know why they happen.

In.Tech: What's the hardest part of the job?

Hafiz: Other than bugs, I'd say it's the long hours. Even for someone like me who's used to it, it gets to you after a while. That's when you need a break.

In.Tech: Let's say I've just finished secondary school. What should I do to prepare myself for a career as a programmer in the games industry?

The people behind the programs



Hafiz: Start learning how to write a game and then write it! It doesn't have to be of professional quality, but at least show that you've put some serious work into it. Learn C and C++ since they are the primary languages used for game development.

In.Tech: How about Java?

Hafiz: I can safely say that Java is okay for mobile phones but it will never be a contender as the language of choice for PC and console development. The speed factor always gets in the way.

In.Tech: Have you ever made any silly mistakes on the job before? Left out a semi-colon, copied and pasted the wrong chunk of code, left infinite loops, etc ...?

Hafiz: Yup ... all of the above.

In.Tech: Learnt anything important from the job?

Hafiz: Yes. If you want to become a games programmer, brace yourself. It's not all fun and games; it's a lot of serious work. You might have to burn the midnight oil more often than you'd like.

You need passion, tons of it. In the end, that's what keeps you going.

The artist/ animator

Johaness R.J. is an animator at GameBrains and has been with the company for a long time. Originally from a post-production background, he always wanted to be involved in the games industry. He got his big break when he found out that Brett Bibby was running a games company and needed some expertise.

In.Tech: Why the distinction between an artist and animator?

Johaness: Specialisation. Animators concentrate purely on movement, making the models and characters move, while artists generally are broken into two as well: Modellers and texture artists.

This specialisation allows each type of artist to concentrate on what they do best, to hone their skills.

In.Tech: What kind of specific knowledge or skill do you need to be an animator in the games industry?

Johaness: As with any other industry, you need formal training as an animator. Once you've got that, the next thing you need is an understanding of the technicalities involved. If you're lucky enough to have done a degree or diploma as a games artist, you'll be trained in all the technical issues.

However, if you come from a traditional 3D or 2D background, what you need to do is to go out and read about game development — the technical and design issues. Information is easy to come by; there are tons of game development books piling up in bookstores across Malaysia.

Also, don't forget that the Web is your biggest resource.

A lot of PC games these days are "mod-able." There are huge online game-mod communities from which you can learn and gain experience. They really teach you the technical aspects of game development.



SOUND ARTIST: Murali at GameBrain's sound studio. He has been composing game music and sound effects since 1998.

That's crucial to me, at least, to get a mind-set of what it takes for game development.

In.Tech: What's the routine like?

Johaness: Once we're full swing into a project and have been given our allocated tasks, we sit down and break down everything into little jobs that we need to do. We come in, we do our work; there's a lot of interaction. Most of us do not have a lot of experience in game development so there is a lot of learning involved. It's a very lively atmosphere.

We have lots of design meetings too. Game production is a very detail oriented task; we need to be organised. The game designer has the entire vision of the game, so we go along and try various things to see if they'll work.

There are a minimum of eight to 10 artists and animators for a small project. Larger games go up to about 15 or 20 at a time.

In.Tech: Do artists and animators provide any technical input in the design of the game?

Johaness: Yeah. All the time. It's an iterative process. We don't want to limit the designer with all the technical issues. The entire game development process is a balance of resources.

In all game consoles, you have a pool of resources divided into code, texture, graphics and audio. If there's any aspect where you want to push more into, it means that you have to take something else away. That's where the artists and animators come in. We tell them what we can leave in and what we can take out.

Let's say we need more resources for audio, I'd go: "Ok, we can exclude this feature but we can't compromise on this one."

In.Tech: What's the best part about the job?

Johaness: It's all about passion for making games. We love creating games. Being able to do what you like and getting paid for it.

In.Tech: What's the worst part, then?

Johaness: The worst part of the job is when you get bogged down by technical issues. There is no real source for solving problems.

Let's say you're trying to implement a special effect but you're not sure how to. While it's easier to get solutions for certain platforms, it's harder for the PS2; there's nowhere to look so you'll just have to keep trying and trying until you get it right.

It's fun but it can also get very tiring.

In.Tech: Do you guys do motion capture?



FINAL TOUCHES: Hafiz (left), Michael and the rest of the staff at Phoenix Games Studio are busy putting the final touches on *Fung Wan Online*.

Johaness: No, we don't. However, we've formulated a rotoscoping system, using a couple of cameras to digitise the motion. The movements that we animate are very limited, looping actions like running, crawling and walking. It's much easier to do this with rotoscoping than sticking a bunch of ping-pong balls over an actor.

In.Tech: Any advice for budding artists and animators who are thinking of working in the games industry?

Johaness: We get a lot of applicants. The biggest issue I have is that a lot of applicants come from post-production backgrounds, which isn't a problem, but they don't even take the initiative to try out anything game-oriented. They play all of these mod-able games but they've never made any modifications of their own.

I'm like, "You want to work in a game company and you haven't even tried that?"

So what do these applicants know? Nothing. So why are they even applying here? We're not a university; we're a professional games company working towards a goal. If we don't know something, we learn it by ourselves. I can't take someone who's totally fresh and go "Here's how we do game development ..."

I really haven't got the time for that. I have

so much to learn myself. My message to anybody who's interested: Please try and do something game-related before you even consider game development as a career.

The Web is full of resources. Take *Unreal Tournament 2003* as an example: It has one of the biggest mod communities and Epic (the game's producers) actually provide the SDKs (software development kits), file exporters and tutorials to help you get started.

They teach you how to do textures and build models. If you haven't got a particular game or tool, buy it. If you can spend thousands of ringgit on a degree, you should be willing spend a few thousand more on your career.

The Game Designer

Michael Ooi is in charge of game design at Phoenix Games Studio. He's been playing traditional, tabletop role playing games like *Dungeons & Dragons* since his primary schooldays, and has been game mastering them for 15 years. Thanks to his background in traditional RPGs, Ooi cultivated an interest in computer RPGs, which eventually became a desire to make a game. When he applied for the job, he had no real game design qualifications except for his many years of playing RPGs.



TAKE THE INITIATIVE: Johaness believes that artists and animators who are planning to work in the games industry should take the initiative to do more game-related projects on their own.

In.Tech: It may be blindingly obvious to you, but could you tell us what game design is?

Michael: Game design is basically the core of any game. The games designer will come up with the idea or concept of the game, how it's supposed to be played and what a player can do in a game. Basically, everything that describes what a game is (i.e. concept, idea, story, description of levels and characters).

In addition to that, the designer also creates the game system or mechanics that game programmers will use to create the way in which the player will interact with the environment of the game.

Finally, the designer is also involved in creating content such as game data and player statistics.

In.Tech: How do you go about designing a game like *Fung Wan Online*?

Michael: Basically, it depends on the type of game or genre that is being developed. Simple games can come up from conceptual ideas. A game like *Fung Wan Online* (also known in the West as *Stormriders*) is far more complex and involves the creation of a persistent world, as well as a system for communication between different online players at the same time.

For this particular game, we first came up with an idea of what the game is about (in this case, it's about the Chinese comic *Fung Wan*) — so that we know roughly which direction to take.

From there, we decided to make a martial arts game and defined what a character can or cannot do. This was used as the basis for the game.

We then came up with more specific details on the interactions that characters can have, such as attacking monsters and defending, as well as the implications of damage caused, strength and other statistics. We extrapolated from this and built up statistics for the game.

From there, other gameplay elements and features were added, such as spells, definitions of where characters will meet particular monsters, how they will obtain their equipment, and so on.

The end result was a mathematical model which defines how your character interacts with every other element in the game.

In our company, the designers work closely with the art/ concept team to create the actual in-game levels. In a way, they also take the role of level designers.

MMORPGs (massive multiplayer online role playing games) require less complex level-designs than first-person perspective shooting games, where the layout of each level is important for actual in-game strategy.

In contrast, the levels in MMORPGs place more of an importance on settings. Hence, the designers do not put that much detail into them. I will usually let them know how big the

level needs to be, what objects they will contain and the locations where they are going to meet monsters.

With this information in place, the art team will visualise the level and work from there.

In.Tech: Once you've done that, do you do a bit of tweaking here and there?

Michael: Yes. Game design is an ongoing process. Of course we need to have a starting point, but the first time you get everything up and running, it's guaranteed that many things will not work the way you planned.

The design phase has to be ongoing since problems can arise. For example, some characters might end up being too strong or too weak. On the technical side of things, a desired feature might not be programmable, it might slow the game down or cause other bugs.

Computers have limited resources in terms of processing power and memory; it's a matter of balancing the resources that you have.

In.Tech: So, do you keep all these ideas in your head? What if you lose your memory?

Michael: We've taken that into account ... we have what we call a design bible which is really the entire game on paper. It's a really fat folder that contains all the details on the game world, character information, how they interact and all the rules that were thought about while creating the game. Everything is documented.

We constantly need to refer back to the design bible because there are so many functions and features. It's impossible to remember everything.

Everyone's perception of the unfinished game may be different, which may pose problems in communication. Sometimes, we forget that not everybody may know the game inside out as we do, which results in the assumption that they (the non-design members of the team) already know what we need. This may result in a incorrectly implemented idea.

In.Tech: Err ... why not keep an electronic copy instead?

Michael: Actually, we *do* have an electronic copy but it's very cumbersome to use. The hardcopy is much better since the electronic version's file size is so huge that going from page to page takes a few seconds to load.

Also, we're too lazy to update the electronic copy ...

In.Tech: Is technical knowledge a must for a game designer?

Michael: Yes. Game designers need to have some technical knowledge, because they need to know how to use the resources and what sort of features are possible to do; there's no point designing something that's not feasible. We need to know the extent of the technical limitations that we're working on.

Obviously, we do not provide input on the actual technical implementation, that's the programmers' speciality. However, they do listen to our suggestions on implementing some features and will review them to see if it's suitable to do it that way.

In.Tech: You've obviously landed yourself a dream job. How did you manage it?

Michael: I have a fanatical interest in games. As I've mentioned, I've been playing RPGs constantly since I was a very little so I have a really good idea on how everything works. In my application letter, I listed down all of the games that I've played. I ended up as an assistant designer, helping mainly with level design and data generation. I eventually ended up here, somehow ...

Generally to prepare yourself as a games designer, you must know the market and what it wants. Understanding how and why a game works a certain way helps in terms of being able to analyse and foresee possible problems that may occur and possible solutions to them.

In.Tech: Use any special design tools?

Michael: I use a pen and paper for design. *Microsoft Excel* is quite useful for RPGs where some formula work needs to be done on character statistics.

In.Tech: Any personal message to the world?

Michael: Games design is an opportunity to make a game. That is basically what every gamer wants to do. Every time I played a game, I often thought, "Oh, if only I could change this," or "I can do better than that."

It's like a dream come true for me but it's a lot tougher than what I originally expected. A lot of people tend to have a misconception of what game design actually entails. The actual design phase is the fun part, which is only about 20-30% of the work involved in RPGs. The remaining percentage involves data creation; you'll be staring at spreadsheets of thousands of numbers everyday, trying to work out formulas and calculations to find the perfect balance.

The sound artist

Murali is the sound artist at GameBrains. He has been composing in-game music and creating sound effects for the company since 1998. He has also done work in other fields and has his own band that plays live electronic music.

In.Tech: From a technical point of view, how is game music different from other forms of music?

Murali: It's very different from the traditional approach to music because you have to be a lot more knowledgeable about the technology and the technical aspects of putting music into games.

The music part of it is quite traditional; it could be any form of background (guitar, piano, etc.). Applying it in the context of games is where it gets tricky. You have to know about how things work to get the music to run in a game.

It's all platform-dependent where every platform has its own limitations as well as formats. The previous Game Boy games were a lot more technical in that you were actually accessing the internal sound hardware, and there are many different ways of doing that. It's different from normal music production work.

In.Tech: How do you go about creating music for games?

Murali: First of all, the standard for desktop music production is MIDI (Musical Instrument Digital Interface), which is how all electronic music equipment communicate. The standard allows it to be implemented inside a game as well. All current generation games consoles have MIDI capabilities which makes it easy to write electronic music for them.

Low-level machines like the Game Boy and some older consoles do not have MIDI; it depends on the tool sets that you use and the rest is done in software. Some make use of tone generators which use square waves; you

MALAYSIAN games companies have been lamenting the lack of local talent, and complaining about graduates who don't seem capable of becoming hotshot games developers.

Apparently, educators at local universities and colleges are aware of these problems. The good news is that over the past few years, several games development courses have crawled out of the woodwork.

Being a relatively new field of study, there are sure to be concerns about the quality of teaching and relevance of these courses.

"The syllabus is based on recommendations by university professors from Britain and from local game developers," says Hilmy Abdul Rahim, a tutor at the Multimedia University (MMU) in Cyberjaya (fit.mmu.edu.my).

"Unfortunately, none of the lecturers have actual working experience in the games industry. This is largely because those who are in the games industry aren't willing to leave it for a career in teaching," he admits.

Hilmy gives lectures in MMU's games development course, formally known as Software Engineering and Games Design, established in 1999. It's a four-year course. The response has been good for such a new programme — between 15 to 25 students enrol in the course each year.

While the course is geared towards game development, the students are taught other modules too. This is to ensure that they would not be left out in the cold if they fail to get a job in the games industry.

"The students have nothing to worry about. By the end of the course, they should be highly proficient in C++ and, with their added knowledge about creative multimedia, they will be equipped for other jobs such as web design and animation," he says.

The students also undergo the usual database programming, software design and mathematics modules so they should be as well prepared as any other software engineering graduate.

Naturally, Hilmy understands the concerns that potential students have about the apparent lack of participation by experienced game developers in the course.

But he argues that MMU probably tries harder than other local universities' software engineering courses in preparing students for the games industry.

"The university itself doesn't have a direct connection with the industry but I do meet with the heads of the local game companies in Malaysia (like GameBrains and Phoenix Games Studio) now and then, to find out what the current standards are within the industry.

"This is done through the IGDA (International Game Developer's Association), of which GameBrains' Brett Bibby (*see main story last Tuesday*) is the head. There is no solid game training programme between the university and the game companies as yet," says Hilmy.

"(Our) students learn a variety of programming implementations such as console programming, OpenGL, DirectX, Flash and Director, all of which would give them a wide base to choose from. They will also learn about game design theories that would let them figure out what would make a good game.

"It is assumed that the students

Education to the rescue



Hilmy: 'One thing students have to realise is that what they are taught in university alone will not be enough. They need to be able to learn on their own.'



will choose their favoured means of expression and develop their games based on these choices."

Game for a degree?

The basic overview of the game development course in MMU is as follows:

● **FIRST year:** A pre-university course taken by all engineering students.

● **SECOND year:** Effectively the first year of university, where the students are taught the basics, with more of a focus on creative multimedia and games towards the end. Students should be proficient in C and C++ languages at the end of the year.

● **THIRD year:** Students are given a series of mini-projects which require them to implement various features that are normally found in games (including gameplay, graphics and other areas).

● **FOURTH year:** Students are given industrial training, but only if games companies agree to it. They also have to do a final year project, which is normally game-related. The area of study or research is entirely up to the students.

Hilmy is also aware that the majority of students who join the course will probably expect to be spoonfed and to be taught everything they need to know; yet another very Malaysian attitude. He is quick to debunk the myth.

"One thing students have to realise is that what they are taught in university alone will not be enough. They need to be able to learn on their own.

"The mini-projects in their third year have been given very tight deadlines; they don't give students a chance to slowly absorb things. Rather, they force them to go and

learn anything else independently. In the long term, it improves their confidence in their own capabilities."

As if lending a helping hand to future employers, Hilmy tries his best to bring students down to earth. To get their heads out of the clouds, so to speak.

Obviously, he has been listening very closely to developers such as GameBrains' Bibby. "As a yearly event, we bring students to some of the local games companies to show them what it's like working in one," says Hilmy.

"Initially, they expect it to be a lot of fun and here's where their dreams are shattered. Not only do they find out that they have to be really good to get in, they also find out what it really means to be really good. Most of them get disillusioned after the visit; not only do the staff work really hard, they must love making games because there is no other reward."

Even as educators, Hilmy and his colleagues are learning about the games industry themselves. Specifically, they have identified several areas where the course (and hence, the quality of teaching) could be improved.

"We would like to see a lot more communication between the course and the games development industry. There are plenty of skilled people in the industry who are willing to speak to students.

"The main problem is that they haven't got a venue for such an exchange. Students themselves are often shy and aren't willing to go up to the developers on their own. We would also like to see more inter-communication between the various universities that offer games development courses here in Malaysia," says Hilmy.

He is quite optimistic about the future, though.

"Hopefully, after the graduates get employed in a games company, they may consider coming back to the university to help out with the course ... maybe even take up a lecturing job. I'm sure it will take several years before something like this happens, but I believe that it will."

With more and more universities and colleges coming up with game design courses, it can only bode well for the future.

Composing game music

● FROM CENTRESPREAD

have to punch in modulation parameters to make the square wave sounds like whatever you're trying to make it sound like.

The original limitation on the Game Boy Colour was 64 kilobytes for the entire game. Even your e-mail takes up more memory these days.

In.Tech: How about the actual music? How's it different?

Murali: The closest parallel to game music would be film scoring. The major difference is that game music is non-linear.

In film, once it's done, you can do a variation of the basic score for every event that happens; you can plan out everything. You don't have that kind of luxury in games. Not only do you not know when an event is going to happen, you can't put in too many sound samples due to hardware limitations.

A console like the PS2 only has 2MB of audio RAM, so everything is basically crammed in there. You often have to use the same sounds over and over again, and sometimes, you have to use some techniques to trick the listener into thinking that it is a different sound.

The limitations I'm talking about are for things such as memory and the number of sound channels that can be played at the same time (polyphony) and the quality of the audio itself. Sometimes you get to use actual audio samples.

In.Tech: With the introduction of CD-ROMs in game consoles since the mid-90s, how has game music changed?

Murali: It varies from developer to developer. Some stream the music straight off the CD-ROM while others use a more complex system which mixes streaming music with other samples. This method combines sections of music rather than playing an entire song.

We like MIDI because it gives you a lot of flexibility. Instead of changing a stereo track (essentially what streaming audio is), you can just pull out one instrument, change a few notes or maybe alter the drums a bit. Another thing is that you can use the same sound set, write 20 different songs and still maintain a very small file size.

One advantage with streaming music and sampled sound is that it allows musicians to include realistic-sounding electric guitars in game music (nearly impossible to do with pure MIDI).

In.Tech: How are the music capabilities of the current generation of games consoles?

Murali: The sound quality varies from console to console. The Nintendo Gamecube has 16MB of audio RAM which allows you to put in a much

higher quality sound set. If I was doing a violin, I wouldn't be limited to one note to use as a sample (modulated to form the various musical notes); I could use two to three samples. If I only had one note and played it up high, it's actually the same audio file being pitched high up to play a note that high, it doesn't sound natural.

This is similar to the concept used by MOD-files (*see below*). We thought of using a MOD-file format for the PS2. Then, after some time, we decided to forget about it because we like the friendlier tool sets you have these days with MIDI mixers such as Cubase, which makes music writing a very creative thing.

Because of this, we have sort of bastardised the MOD format and moved completely to MIDI with wave samples.

MOD files aren't completely irrelevant, though. There's still an active community on the Net. I like MOD-files because they are the only format that encapsulates everything in one file. It's got all of the audio samples, parametric data, song data and everything else ... no other audio format provides this level of portability.

MOD-files: A high-quality track-based music format that uses digital audio wave samples. It was made popular by the Commodore Amiga in the early 90s. MOD here should not be confused with game "mod"-ifications).

In.Tech: What's the deal with positional audio techniques and 3D sound?

Murali: I like the idea but I don't see it being used very widely so I wonder what's the point. We do use it to a certain extent; we've been using Dolby Pro Logic which provides surround sound from stereo channels. I think it will be more widely used once Dolby Digital 5.1 sound systems become common denominators in people's living rooms.

In.Tech: Do you feel that audio is often neglected in game design?

Murali: The audio field of the games industry is moving forward very rapidly. People are starting to realise that audio has been taking the back seat for too long and graphics have sort of hit a brick wall already. It's come to a point that making things look nicer isn't going to sell your game anymore. People expect it. Because of that, you have to look into other areas to provide a more immersive experience.

Audio plays a huge part in that, especially positional audio. The feedback that you can get is immeasurable. Even if something is off-screen, you can still receive information about its location if you can hear it — something creeping up from behind you, for example.